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Frontiers of Health Innovations and Medical Advances

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Effectiveness of Structured Teaching on Catheter-Associated Urinary Tract Infection (CAUTI) Prevention among Nurses at NMCH

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Articalinfo

Article history: Received 22 June 2025, Revised 18 Aug 2025, Accepted 20 Aug 2025, Published Sept 2025

Keywords: Structured teaching program, catheter-associated urinary tract infection, indwelling catheter, staff nurses, NMCH

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Citation: Kant Krishna, Kumar Raju, Tiwari Vivek, Kumari Rajlaxmi, Gupta Shivanand, Patel Sajjan, Latha. 2025. Effectiveness of Structured Teaching on Catheter-Associated Urinary Tract Infection (CAUTI) Prevention among Nurses at NMCH, Frontiers of Health Innovations and Medical Advances.1,1,1-6.https://doi.org/10.1000/002

Publisher: Curecita Research Pvt Ltd

Abstract

Catheter-Associated Urinary Tract Infection (CAUTI) is among the most common yet preventable healthcare-associated infections, posing a significant threat to patient safety worldwide. UTIs related to indwelling catheter use constitute nearly 40% of all hospital-acquired infections (CDC, 2019). The risk of CAUTI rises with prolonged catheterization, improper insertion, poor hand hygiene, and inadequate adherence to catheter care protocols. Indwelling urinary catheters are commonly used in hospitals for managing acute urinary retention, during surgical procedures, and in critically ill patients.

Introduction

Catheter-Associated Urinary Tract Infections (CAUTIs) are among the most prevalent healthcare-associated infections (HAIs) worldwide. In 2015 alone, an estimated 62,700 urinary tract infections occurred in acute care hospitals, and approximately 75% of hospital-acquired UTIs were linked to urinary catheter use. Nearly 15–25% of hospitalized patients require an indwelling catheter at some point during their stay. CAUTIs significantly increase patient morbidity, mortality, healthcare costs, and length of hospital stay (Berman et al., 2022).

UTIs occur when bacteria—commonly from the skin or rectal area—enter the urethra and infect the urinary tract (Black et al., 2021). While infections may involve various parts of the urinary system, cystitis remains the most common. CAUTIs, largely caused by instrumentation of the urinary tract, account for about 40% of all hospital-acquired infections (CDC, 2019). The risk rises with prolonged catheterization, improper insertion, inadequate hand hygiene, and poor compliance with catheter care protocols.

Indwelling urinary catheters are frequently used for acute urinary retention, perioperative management, and care of critically ill patients. However, unnecessary or extended catheter use can introduce pathogens, resulting in complications such as cystitis, pyelonephritis, and even sepsis. Evidence suggests that 17–69% of CAUTIs can be prevented through adherence to evidence-based guidelines and high-quality nursing care.

This study aims to assess staff nurses' baseline knowledge and practices related to CAUTI prevention, evaluate the effect of a structured teaching program, and identify barriers to guideline implementation.

Methodology:

The study employed a descriptive research approach with a one-group design. It was conducted among staff nurses at NMCH Jamuhar, Sasaram, Rohtas. A randomized sampling technique was used to select 60 nurses who provided care to patients with indwelling urinary catheters. Data were collected through a structured survey administered by the researcher and analyzed using descriptive and inferential statistical methods.

Result and discussion:

The study included 60 staff nurses. In the pre-test, 37% of participants had poor knowledge, 50% had fair

knowledge, and 13.3% demonstrated good knowledge regarding CAUTI prevention. Following the structured teaching program, knowledge levels improved significantly, with only 10% showing poor knowledge, 20% fair knowledge, and 70% achieving good knowledge.

Aspect-wise analysis revealed a mean knowledge score of 82.73% with a standard deviation of 5.10%. The highest mean scores were recorded in the areas of general knowledge (84.58%), urinary catheterization (83.75%), CAUTI-related information (85.14%), and prevention of urinary tract infection (81.46%).

Comparison of pre-test and post-test levels showed that 33 participants (82.5%) had inadequate knowledge before the intervention, while none remained in this category after the program. Moderate knowledge was seen in 7 nurses (17.5%) in the pre-test and 8 nurses (20%) in the post-test. No participants had adequate knowledge in the pre-test; however, 32 nurses (80%) achieved an adequate level in the post-test.

These findings demonstrate a significant improvement in knowledge following the Structured Teaching Programme conducted among staff nurses at Narayan Medical College and Hospital, Jamuhar, Sasaram, Rohtas, Bihar.

Table-1: Aspect-wise Posttest mean knowledge regarding urinary tract infection associated with an indwelling urinary catheter.

N = 60

S. No	Aspects	Max Score	Range Score	Response to Knowledge		
				Mean	Mean (%)	SD (%)
A1	General aspect	6	4-6	5.07	84.58	1.98
A2	Indwelling Urinary catheter	6	3-6	5.02	83.75	0.96
A3	UTI associated with urinary catheterization	17	10-17	14.47	85.14	1.74
A4	Prevention of urinary tract infections infection	46	31.44	37.47	81.46	2.76
Over all		75	52-71	62.05	82.73	5.10

COMPARISON OF the KNOWLEDGE LEVEL OF PATIENTS BEFORE AND AFTER GIVING STP

Table 2: Pre and post-test knowledge level of patients

N = 60

S.No	Knowledge level	Respondents			
		Pre-Test		Post - Test	
		Number	Percentage	Number	Percentage
1	Inadequate (<50%)	53	82.5	-	-
2	Moderate (50-75%)	7	17.5	8	20
3	Adequate (>75%)	-	-	52	80
Over all		60	100	60	100

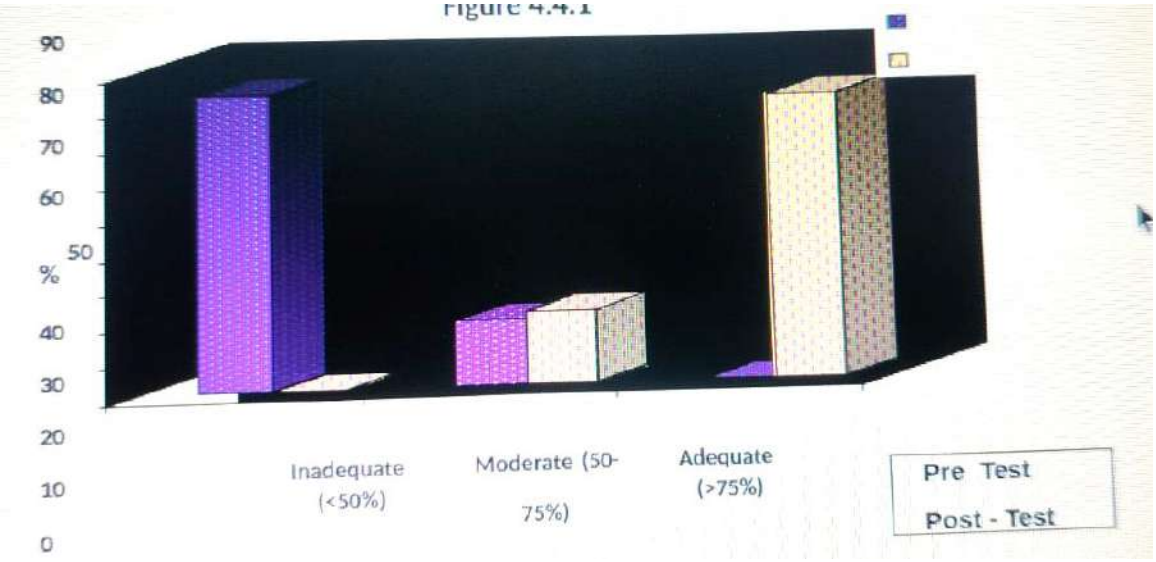

Figure -1: Pre and post-test knowledge level of patients

Conclusion:

The present study aimed to assess the effectiveness of a structured teaching program among staff nurses and its impact on their knowledge of CAUTI prevention. The findings indicate that various factors influenced the nurses' knowledge levels regarding CAUTI care. The study underscores that Catheter-Associated Urinary Tract Infections (CAUTIs) remain a significant yet preventable challenge in hospital settings, often arising from inadequate adherence to evidence-based catheter care practices. The structured teaching program led to a substantial improvement in the nurses' knowledge and awareness, particularly in areas such as hand hygiene, aseptic catheter insertion, and strict compliance with catheter care protocols. Enhanced nursing competency plays a vital role in reducing infection risks, thereby improving patient safety and overall quality of care. These results highlight the necessity of ongoing education and training to strengthen infection control practices and reduce healthcare-associated infections in clinical environments.

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